

REMARKS/ARGUMENTS

The Applicants originally submitted Claims 1-21 in the application. In the present response, no claims have been amended, cancelled or added. The Examiner has stated that the subject matter of Claims 6, 13 and 20 is allowable if rewritten in independent form. (Examiner's Final Action, page 6). The Applicants agree and assert that all of the currently pending claims in the application, Claims 1-21, are allowable.

I. Rejection of Claims 1, 5, 7-8, 12, 14-15, 19 and 21 under 35 U.S.C. §102

The Examiner has rejected Claims 1, 5, 7-8, 12, 14-15, 19 and 21 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 5,487,095 to Hanz, *et al.* (Hanz). The Examiner asserts that Hanz teaches each and every element of independent Claims 1, 8 and 15. (Examiner's Final Action, page 2). The Applicants respectfully disagree.

Hanz addresses signal reflections at transitions between microstrip lines of variable widths that are utilized, for example, for reducing loss, layout requirements and processing requirements. To reduce the signal losses at the transitions, Hanz introduces ground planes for the variable width sections of the microstrip lines to provide a substantially constant impedance along the length thereof. (Column 1, line 45 to Column 2, line 3). Thus, Hanz teaches adding ground planes to cooperate with variable width sections of the microstrip lines to provide a constant impedance therefor. As discussed in the background of the present application, this requires additional layers in the packaging substrate thereby increasing the cost. (Page 3, paragraph 5). Alternatively, the present invention intentionally varies the width of conductors within signal transmission zones to provide a characteristic impedance for the conductors within the signal transmission zones in which

the conductors traverse. Hanz, therefore, does not teach a first conductor having a first width that provides a characteristic impedance within the first signal transmission zone and a second conductor, coupled to the first conductor, having a second width that provides substantially the characteristic impedance within the second signal transmission zone as recited in Claims 1, 8 and 15.

Additionally, Hanz does not teach the first and second conductor traversing the first and the second zone as recited in Claims 1, 8 and 15. As discussed in the specification, zones are not arbitrary designations but are partitioned, such as by a packaging regime, portions of an integrated circuit that create different signal transmission environments and properties. The different signal transmission environments and properties, for example, may be due to the different nature of their respective proximity to the surface of a four-layer, flip chip substrate. As discussed with respect to FIGURE 1, the first transmission zone can occur between the four-layer, flip chip substrate and a metallic heatspreader and the second signal transmission zone can occur between the four-layer, flip chip substrate and the metallic stiffener. (Page 8, paragraphs 19-20). Hanz does not teach the microstrip lines traverse such zones as discussed and claimed in the present invention. Instead, the Examiner designates sections of different width lines as different zones which the sections of line traverse. (Examiner's Final Action, page 6).

Since Hanz does not teach each and every element of independent Claims 1, 8 and 15, Hanz does not anticipate Claims 1, 8 and 15 and Claims dependent thereon. Accordingly, the Applicants respectfully request the Examiner to remove the §102(b) rejection of these Claims and issue an allowance for Claims 1, 5, 7-8, 12, 14-15, 19 and 21.

II. Rejection of Claims 1, 2, 5, 7-9, 12, 14-16, 19 and 21 under 35 U.S.C. §102

The Examiner has rejected Claims 1, 2, 5, 7-9, 12, 14-16, 19 and 21 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent 6,518,663 to James, *et al.* (James). The Examiner asserts that James teaches each and every element of independent Claims 1, 8 and 15. (Examiner's Action, page 3). The Applicants respectfully disagree.

James teaches employing graduated widths and variable spacing to maintain a characteristic impedance over the length of a signal line. (Column 2, lines 58-66). Graduated widths, however, differ from a first width in a first zone and a second width in a second zone as claimed in the present invention since the graduated widths are not a designated width for a particular zone but instead are continually changing throughout the length of the signal lines. (FIGURE 2). As discussed above with respect to Hanz, a zone is not an arbitrary label but a defined partition of an integrated circuit. Thus, James does not teach the signal lines have a single width through a zone but teaches a signal line of an ever changing graduate width. James, therefore, does not teach a first conductor traversing a first signal transmission zone having a first width that provides a characteristic impedance within the first signal transmission zone and a second conductor traversing a second signal transmission zone, coupled to the first conductor, having a second width that provides substantially the characteristic impedance within the second signal transmission zone as recited in Claims 1, 8 and 15.

Since James does not teach each and every element of independent Claims 1, 8 and 15, James does not anticipate Claims 1, 8 and 15 and Claims dependent thereon. Accordingly, the Applicants respectfully request the Examiner to remove the §102(e) rejection of these Claims and issue an allowance for Claims 1, 2, 5, 7-9, 12, 14-16, 19 and 21.

III. Rejection of Claims 2, 9 and 16 under 35 U.S.C. §103

The Examiner has rejected Claims 2, 9 and 16 under 35 U.S.C. §103(a) as being unpatentable over Hanz. The Examiner asserts that Hanz teaches each and every element of Claims 2, 9 and 16 except expressly teaching plural transmission lines. (Examiner's Final Action, page 4).

As discussed above, however, Hanz does not teach a first conductor traversing a first signal transmission zone having a first width that provides a characteristic impedance within the first signal transmission zone and a second conductor traversing a second signal transmission zone, coupled to the first conductor, having a second width that provides substantially the characteristic impedance within the second signal transmission zone as recited in Claims 1, 8 and 15. Additionally, Hanz does not suggest each and every element of Claims 1, 8 and 15 since Hanz explicitly teaches employing corresponding ground planes to provide constant characteristic impedance. Since Hanz does not teach or suggest each and every element of independent Claims 1, 8 and 15 and Claims 2, 9 and 16 which depend thereon, Hanz does not present a *prima facie* case of obviousness of Claims 2, 9 and 16. Accordingly, Claims 2, 9 and 16 are not unpatentable over Hanz and the Applicants respectfully request the Examiner to withdraw the §103(a) rejection of these Claims and allow issuance.

IV. Rejection of Claims 3-4, 10-11 and 17-18 under 35 U.S.C. §103

The Examiner has rejected Claims 3-4, 10-11 and 17-18 under 35 U.S.C. §103(a) as being unpatentable over either Hanz or James in view of U.S. Patent No. 6,424,027 to Lamson, *et al.*, (Lamson). The Applicants respectfully disagree.

The Examiner asserts that neither Hanz nor James teach the subject matter of dependent Claims 3-4, 10-11 and 17-18. (Examiner's Final Action, pages 4-5). As discussed above, Hanz also fails to teach or suggest and James also fails to teach each and every element of independent Claims 1, 8 and 15. Additionally, James fails to suggest each and every element of Claims 1, 8 and 15 since James explicitly teaches employing a graduated width signal line and variable spacing to provide approximately a constant characteristic impedance. (Column 2, lines 58-67). Lamson has not been cited to cure these deficiencies of Hanz or James but instead has been cited to teach the subject matter of Claims 3-4, 10-11 and 17-18. Since Claims 3-4, 10-11 and 17-18 depend on independent Claims 1, 8 and 15, the cited combination of Hanz or James and Lamson fails to teach or suggest each and every element of Claims 3-4, 10-11 and 17-18 and does not establish a *prima facie* case of obviousness of Claims 3-4, 10-11 and 17-18. Accordingly, the Applicants respectfully request the Examiner to withdraw the §103(a) rejection and issue allowance for Claims 3-4, 10-11 and 17-18.


V. Conclusion

In view of the foregoing remarks, the Applicants now see all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicit a Notice of Allowance for Claims 1-21.

The Applicants request the Examiner to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present application.

Respectfully submitted,

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